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Hochmuth

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(54) **ESTABLISHING A REMOTE SESSION BETWEEN A RECEIVING STATION AND A SENDING STATION**

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H04L 12/28 (2006.01)
H04L 29/08 (2006.01)

(52) **U.S. Cl.**
CPC ***H04L 67/141*** (2013.01); ***H04L 67/14*** (2013.01); *H04L 12/2854* (2013.01)

(58) **Field of Classification Search**
None
See application file for complete search history.

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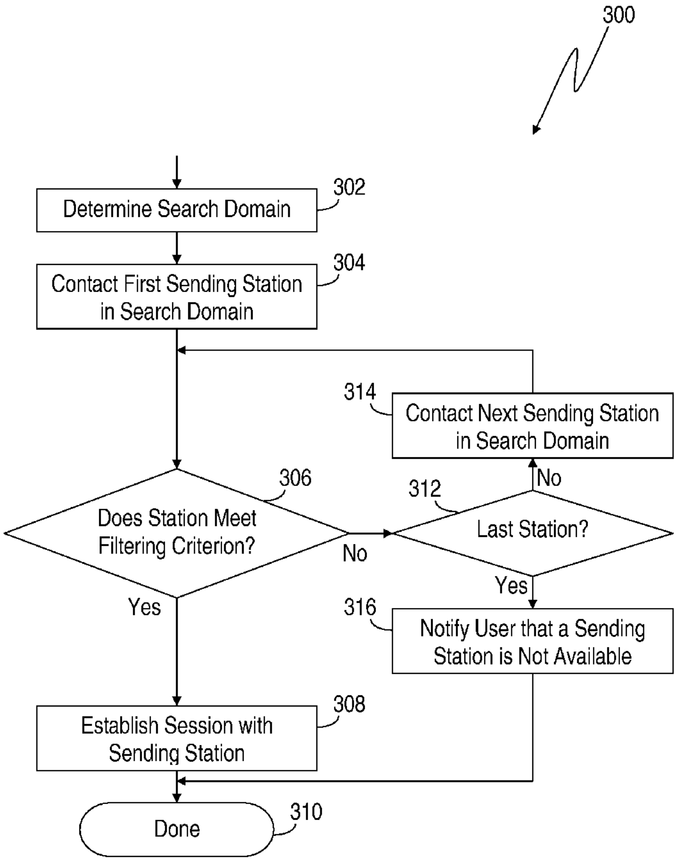
(57) **ABSTRACT**

A method is described that comprises a receiving station determining whether at least one sending station (coupled to the receiving station in a peer-to-peer configuration) meets a filtering criterion, and establishing a remote session between the receiving station and a sending station for which the filtering criterion is met.

19 Claims, 5 Drawing Sheets


300
Determine Search Domain
302
Contact First Sending Station in Search Domain
304
314
Contact Next Sending Station in Search Domain
306
312
No
Does Station Meet Filtering Criterion?
No
Last Station?
Yes
Yes
316
Notify User that a Sending Station is Not Available
Establish Session with Sending Station
308
Done
310

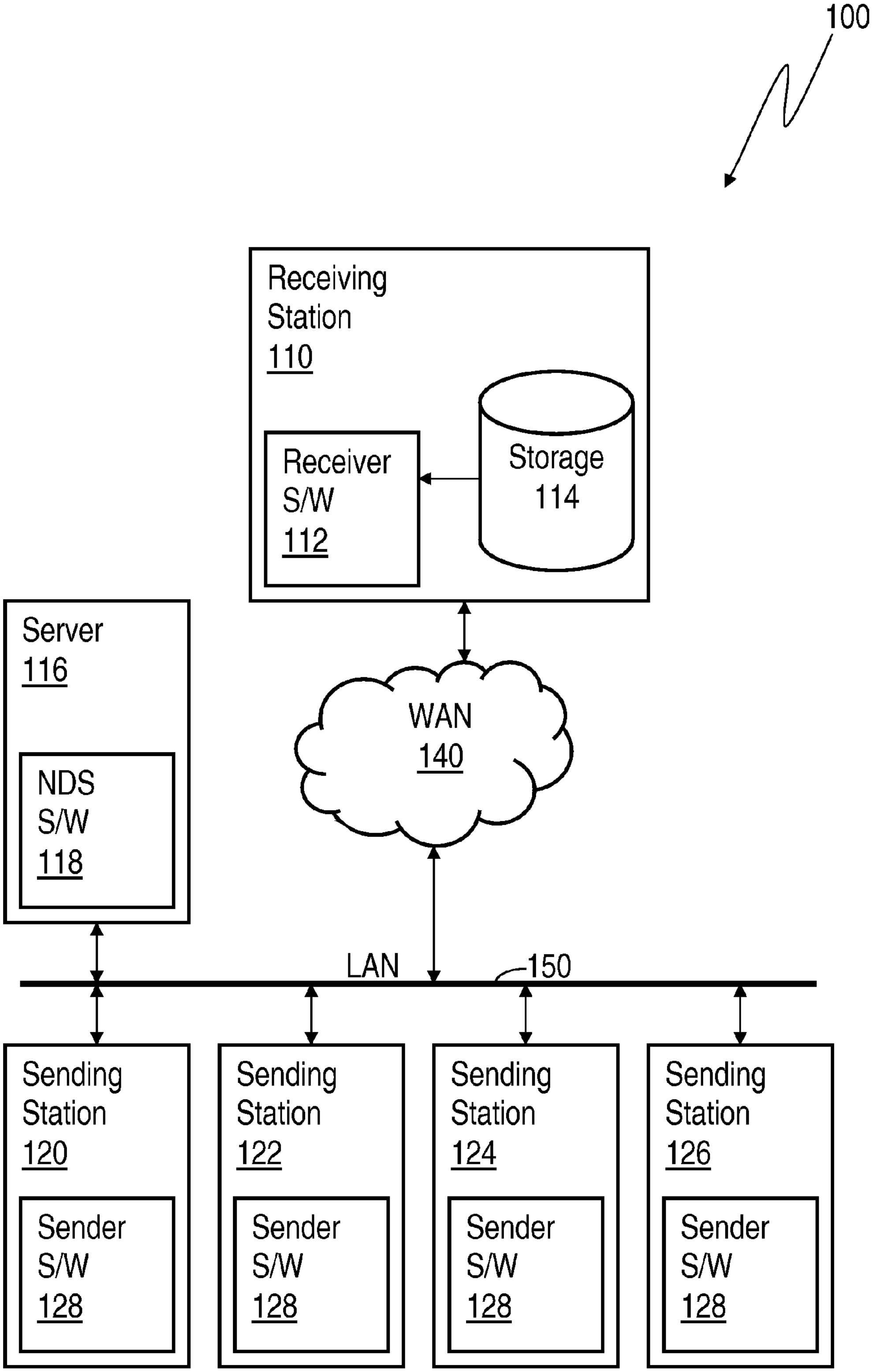

100
Receiving Station 110
Receiver S/W 112
Storage 114
Server 116
NDS S/W 118
WAN 140
LAN
150
Sending Station 120
Sender S/W 128
Sending Station 122
Sender S/W 128
Sending Station 124
Sender S/W 128
Sending Station 126
Sender S/W 128

FIG. 1

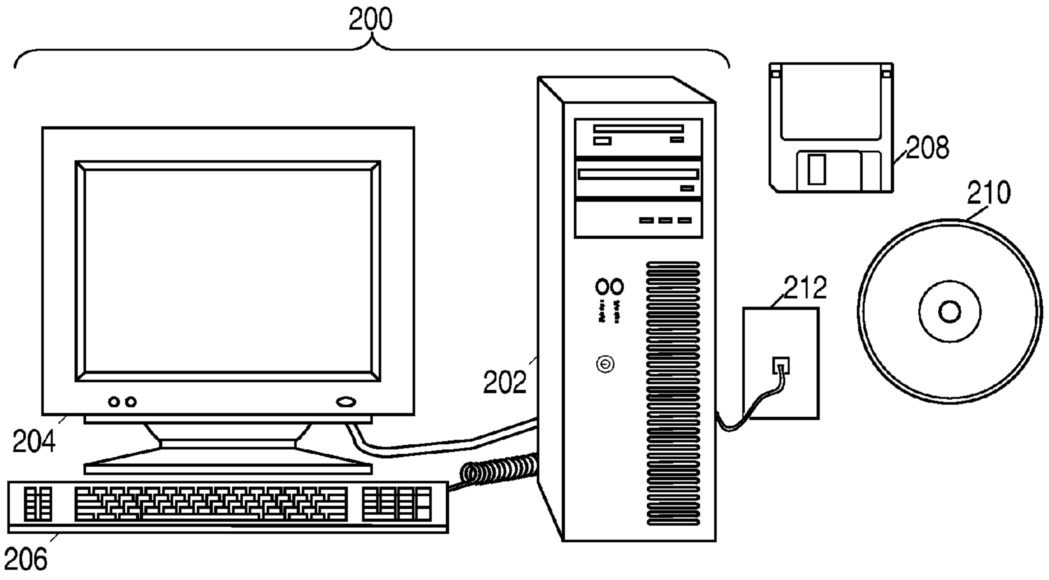

200
202
204
206
208
210
212

FIG. 2A

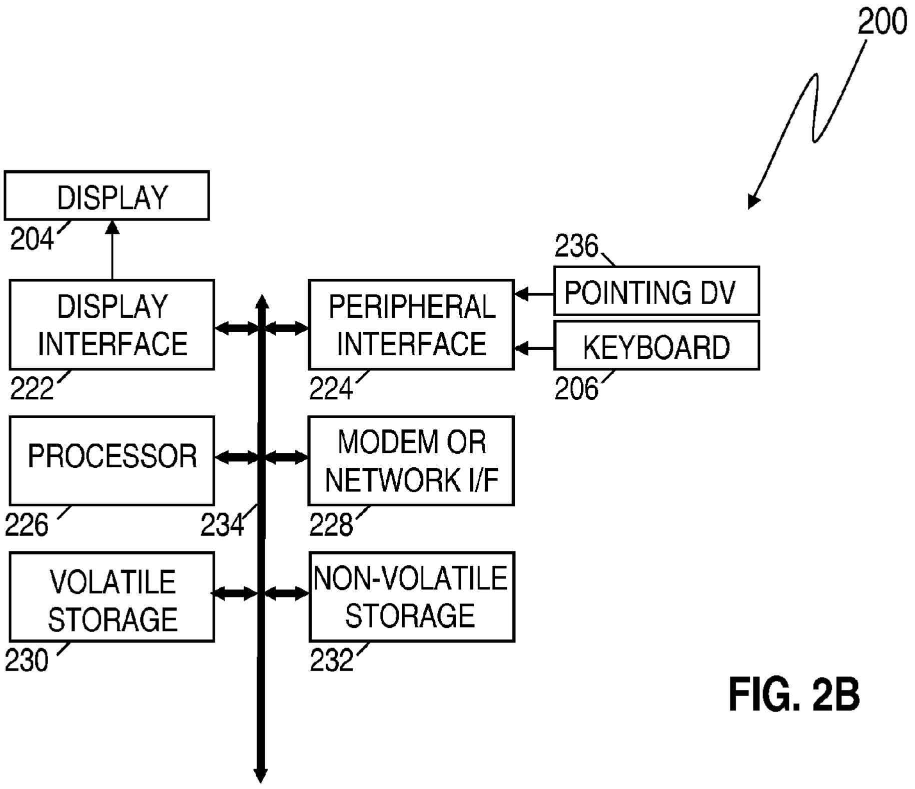

200
DISPLAY
204
DISPLAY INTERFACE
222
PERIPHERAL INTERFACE
224
236
POINTING DV
KEYBOARD
206
PROCESSOR
226
234
MODEM OR NETWORK I/F
228
VOLATILE STORAGE
230
NON-VOLATILE STORAGE
232

FIG. 2B

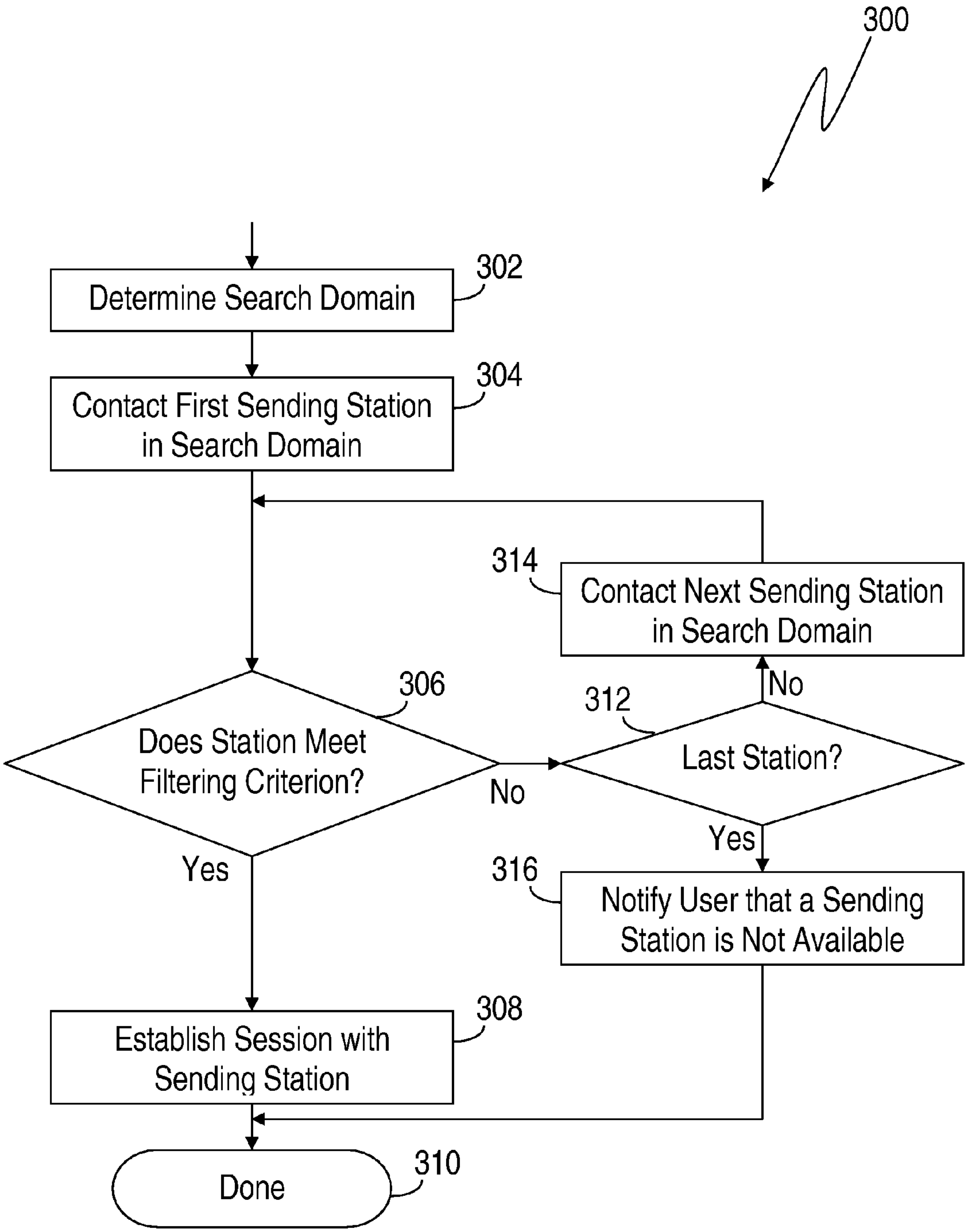
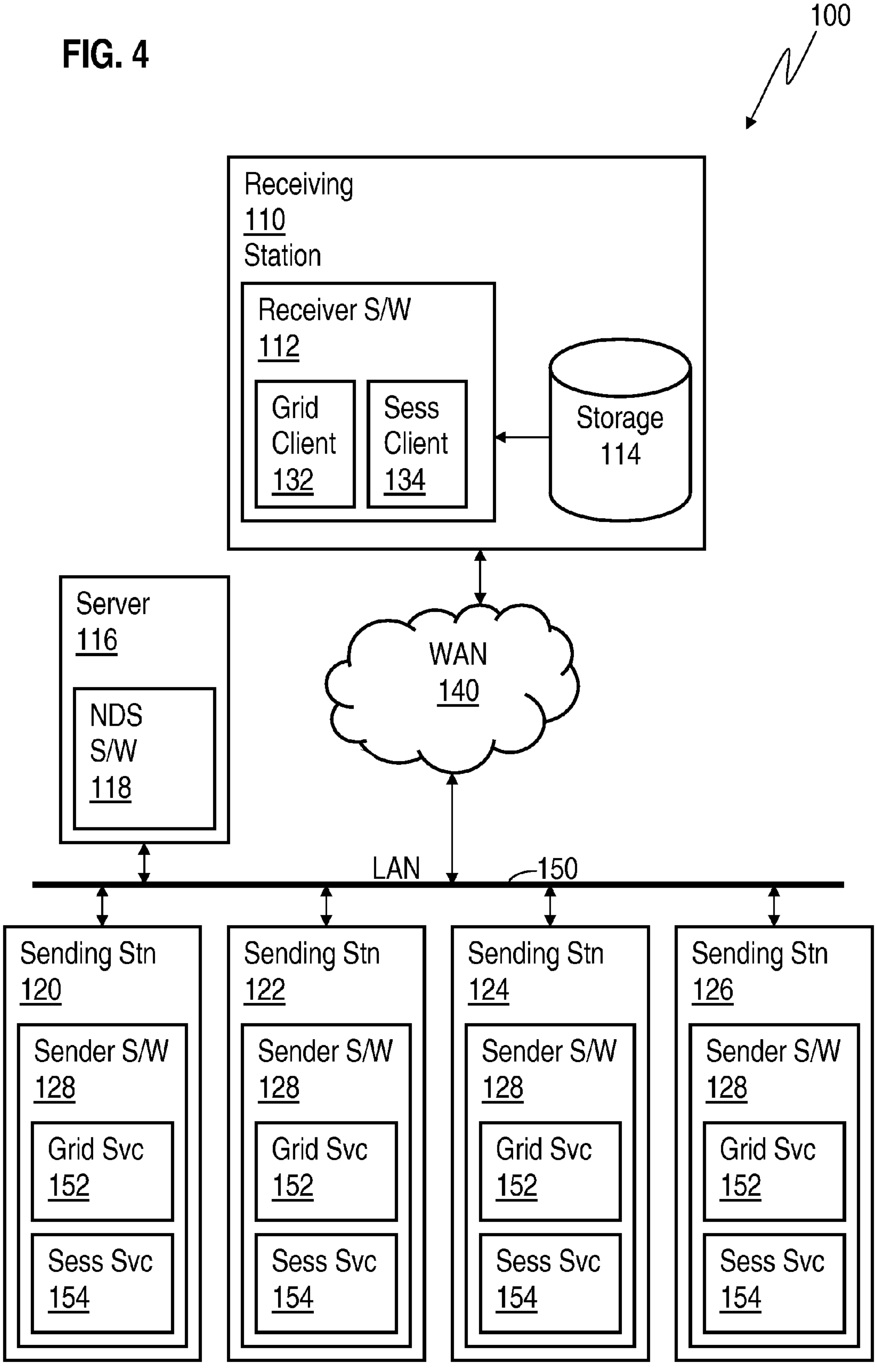

300
Determine Search Domain
302
Contact First Sending Station in Search Domain
304
Does Station Meet Filtering Criterion?
306
No
Yes
Last Station?
312
No
Yes
Contact Next Sending Station in Search Domain
314
Notify User that a Sending Station is Not Available
316
Establish Session with Sending Station
308
Done
310

FIG. 3

FIG. 4


100
Receiving
110
Station
Receiver S/W
112
Grid
Client
132
Sess
Client
134
Storage
114
Server
116
NDS
S/W
118
WAN
140
LAN
150
Sending Stn
120
Sender S/W
128
Grid Svc
152
Sess Svc
154
Sending Stn
122
Sender S/W
128
Grid Svc
152
Sess Svc
154
Sending Stn
124
Sender S/W
128
Grid Svc
152
Sess Svc
154
Sending Stn
126
Sender S/W
128
Grid Svc
152
Sess Svc
154

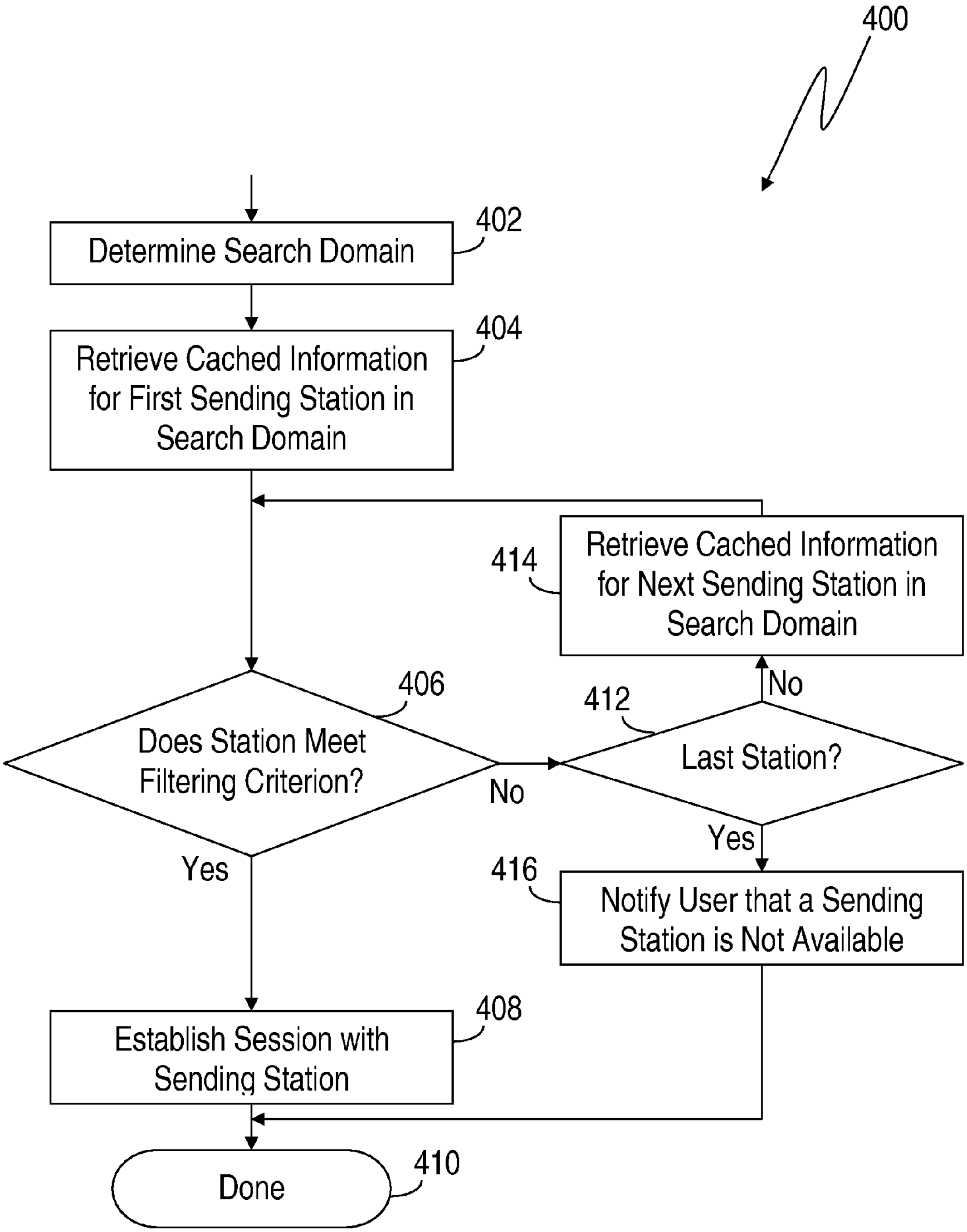

400
Determine Search Domain
402
Retrieve Cached Information for First Sending Station in Search Domain
404
Retrieve Cached Information for Next Sending Station in Search Domain
414
Does Station Meet Filtering Criterion?
406
No
Last Station?
412
No
Yes
Yes
Notify User that a Sending Station is Not Available
416
Establish Session with Sending Station
408
Done
410

FIG. 5

ESTABLISHING A REMOTE SESSION BETWEEN A RECEIVING STATION AND A SENDING STATION

BACKGROUND

With the proliferation of high speed networks and Internet access, an increasing number of corporate entities now provide their employees with remote access to corporate computers. This allows employees to work from home or other locations during normal working hours (sometimes referred to as telecommuting), as well as after-hours and on weekends. Such remote access to computer resources is provided by a variety of software packages, such as, for example, Remote Desktop Client interaction with Terminal Services, both by Microsoft®. These and other similar software packages provide a single network access point to a collection of terminal sessions or virtual computers. Once logged in, each desktop appears to its respective remote user as the desktop would appear if the user were logged directly onto an actual, distinct computer. In fact, the remote user is logged onto one of a plurality of virtualized machines, all executing on a single server or cluster of servers. In order to support a large number of remote users using a Terminal Services type of solution, powerful and expensive high-speed servers are needed. In high-reliability environments, redundant or clustered servers may be required, increasing the cost even further.

BRIEF DESCRIPTION OF THE DRAWINGS

For a detailed description of exemplary embodiments of the invention, reference will now be made to the accompanying drawings in which:

FIG. **1** shows a system comprising a receiving station and a collection of networked sending stations, configured to operate in accordance with at least some illustrative embodiments;

FIG. **2**A shows an example of a system configuration, suitable for use as both the receiving and sending stations of FIG. **1**, in accordance with at least some illustrative embodiments;

FIG. **2**B shows a block diagram of the system configuration of FIG. **2**A, in accordance with at least some illustrative embodiments;

FIG. **3** shows a method implementing a peer-to-peer dynamic allocation of computer systems for use in a remote session, in accordance with at least some illustrative embodiments;

FIG. **4** shows a system comprising receiver and sender software that each comprise multiple software sub-functions, configured to operate in accordance with at least some illustrative embodiments; and

FIG. **5** shows a method implementing a peer-to-peer dynamic allocation of computer systems using locally cached information for use in a remote session, in accordance with at least some illustrative embodiments.

NOTATION AND NOMENCLATURE

Certain terms are used throughout the following description and claims to refer to particular system components. As one skilled in the art will appreciate, computer companies may refer to a component by different names. This document does not intend to distinguish between components that differ in name but not function. In the following discussion and in the claims, the terms "including" and "comprising" are used in an open-ended fashion, and thus should be interpreted to mean "including, but not limited to . . . . " Also, the term "couple" or "couples" is intended to mean either an indirect, direct, optical or wireless electrical connection. Thus, if a first device couples to a second device, that connection may be through a direct electrical connection, through an indirect electrical connection via other devices and connections, through an optical electrical connection, or through a wireless electrical connection. Additionally, the term "system" refers to a collection of two or more hardware and/or software components, and may be used to refer to an electronic device, such as a computer, a portion of a computer, a combination of computers, etc. Further, the term "software" includes any executable code capable of running on a processor, regardless of the media used to store the software. Thus, code stored in non-volatile memory, and sometimes referred to as "embedded firmware," is included within the definition of software.

DETAILED DESCRIPTION

Systems for providing remote access to collections of personal computer resources have increased in popularity in recent years. FIG. **1** shows such a computer system **100**, in accordance with at least some illustrative embodiments, in which a receiving station **110** accesses any of a collection of sending stations **120-126**. The sending stations **120-126** couple to a local area network (LAN) **150**, which in turn couples to a wide area network (WAN) **140**. The receiving station thus accesses each of the sending stations **120-126** via both LAN **150** and WAN **140**. The receiving system **110** and the sending stations **120** are configured in a "peer-to-peer" configuration. In such a configuration, any one station can communicate with any other station without any one station having to arbitrate or control the transactions of the other stations, as is the case in a client-server configuration. Thus, in such a peer-to-peer configuration, the failure of a single station does not compromise or affect the operation of the other stations within the system.

In at least some illustrative embodiments, receiving station **110** comprises receiver software (Receiver S/W) **112**, which in turn comprises executable code running on receiving station **110** and provides the functionality of receiving station **110** as described below. Receiving station **110** also comprises storage device **114**, which may optionally be used to store at least some configuration information used by receiver software **112**. Similarly, each of sending stations **120-126** comprise an instance of sender software (Sender S/W) **128**), which each in turn comprises executable code running on each of sending stations **120-126**, and which provides the functionality of sending stations **120-126**, also described below. In at least some illustrative embodiments a server **116** also couples to LAN **150**. Such a server comprises Network Directory Service software (NDS S/W) **118**, which comprises executable code running on server **116**. The NDS software optionally provides the receiving station with identification information about each of the sending stations **120-126**, as described below.

Continuing to refer to FIG. **1**, a user of the receiving station **110** initiates a request for a remote session with one of the remote sending stations **120-126**. A remote session is a process by which two computers, a receiving station that initiates the session and a sending station that hosts the session, interact to provide a user at the receiving station with a computing environment that appears to the user as if the user were logged directly into the sending station. The host sending station provides graphical information to the receiving station, which displays the images represented by the information as the images would be displayed at the sending station if the user were logged-in locally to the sending station. Likewise, the user provides inputs to the sending station via input devices coupled to the receiving station (e.g., a keyboard and mouse), and said inputs are received and processed by the sending station in the same manner as inputs provided by a locally logged-in user.

In at least some of the illustrative embodiments described, the remote session request initiated by the user is not directed to a specific sending station. Instead, the receiver software **112**, executing within receiving station **110**, identifies a sending station that meets one or more operational constraints or "filtering criteria" specified by the user, and establishes a remote session with the first identified sending station that meets the filtering criteria. Receiver software **112** executing within receiving station **110** responds to the user's request by determining a search domain within which to search for a suitable sending station that meets the filtering criteria. In at least some illustrative embodiments, the search domain comprises a list of sending stations which, at a given time, may be available for use by the receiving station **110** as a host to a remote session.

The search domain may be defined in a variety of ways. In at least some illustrative embodiments, for example, the search domain is defined by a file maintained on non-volatile storage device (Storage) **114** within receiving station **110**, listing identification information of sending stations **120-126**. This information allows receiving station **110** to contact the sending stations **120-126** as described below. In at least some other illustrative embodiments, the search domain is defined by a list of sending stations provided by Network Directory Service software (e.g., NDS S/W **118** executing on server **116**). Such software provides identification information similar to that listed in the file maintained on non-volatile storage device **114** described above. The receiving station **110** accesses the information by issuing a query across LAN **150** to server **116**, which in turn provides the list of sending stations requested.

In yet other illustrative embodiments, the search domain is defined by a locally cached dynamic list of sending stations compiled using a network discovery query via a network broadcast or multicast mechanism. In such an embodiment, receiver software **112** and sender software **128** each comprise a component capable of issuing and responding to, respectively, such network broadcast and/or multicast queries. The receiver software builds and maintains cached lists of sending stations based upon the responses received to the queries. The list is subsequently used to determine the search domain.

Once a search domain has been determined, receiver software **112** queries each of the sending stations **120-126** across the WAN **140** and LAN **150** to determine if any of the sending stations meets one or more filtering criteria for the requested session. As previously noted, the filtering criteria are provided by the user, and serve as a selection filter used to define a sub-set of sending stations within the search domain that the user will accept as remote session hosts. This selection filter defines one or more operational constraints that the user requires of the sending station hosting the remote session. Each sending station's sender software **128** maintains the status and configuration information for that sending station, and provides such information to the receiver station **110** in response to the query from the receiver software **112**. Responses sent by each sender software **128** instance enables receiver software **112** to determine if a filtering criterion has been met. Such criteria may comprise whether or not the sending station is available (i.e., no other user is logged onto the station), whether required software is loaded and available on the sending station, whether the requesting user is already logged onto the sending station (i.e., a request to resume an established session), or any combination of such criteria. Other filtering criteria are possible as well, and all such criteria are within the scope of the present disclosure.

In at least some illustrative embodiments, once a sending station **120-126** within the search domain is located by the receiving station **110** that meets the filtering criteria, the search is complete and the receiving station contacts and enables the user to log onto the identified sending station. Any of a variety of protocols, such as the remote desktop protocol (RDP), may be used to establish the session and exchange data between the receiving station **110** and the selected sending station **120-126**, and all such protocols are within the scope of the present disclosure.

FIGS. **2**A and **2**B show an illustrative system configuration **200** suitable for implementing the receiving station **110** and the sending stations **120-126** of FIG. **1**. As shown, the illustrative system configuration **200** comprises a chassis **202**, a display **204**, and an input device **206**. The system configuration **200** comprises a processor **226**, volatile storage **230**, and non-volatile storage **232**. Volatile storage **230** comprises a computer readable medium such as random access memory (RAM). Non-volatile storage **232** comprises a computer readable medium such as flash RAM, read-only memory (ROM), a hard disk drive, a compact disk read-only memory (CD-ROM), and combinations thereof. The computer readable media of both volatile storage **230** and non-volatile storage **232** comprises, for example, software that is executed by processor **226** and provides computer system **100** with some or all of the functionality described herein. The system configuration **200** also comprises a network interface **228** that enables the system **200** to receive information via a local area network and/or a wired or wireless wide area network, represented in FIG. **2**A by Ethernet jack **212**. A display interface **222** couples to the display **204**. A user interacts with the station via the input device **206** and/or pointing device **236** (e.g., a mouse), which couples to a peripheral interface **224**. The display **204**, together with the input device **236** and/or the pointing device, may together operate as a user interface.

The system configuration **200** may also comprise a display interface **222**, a peripheral interface **224** and a bus **234**. System **200** may be a bus-based computer, with the bus **234** interconnecting the various elements described in FIG. 2B. The peripheral interface **224** accepts signals from the keyboard **206** and other input devices such as a pointing device **236**, and transforms the signals into a form suitable for communication on the bus **234**. The display interface **222** may comprise a video card or other suitable display interface that accepts information from the bus **234** and transforms it into a form suitable for the display **204**.

The processor **226** gathers information from other system elements, including input data from the peripheral interface **224**, and program instructions and other data from non-volatile storage **232** or volatile storage **230**, or from other systems (e.g., a server used to store and distribute copies of executable code) coupled to a local area network or a wide area network via the network interface **228**. The processor **226** carries out the program instructions and processes the data accordingly. The program instructions may further configure the processor **226** to send data to other system elements, comprising information for the user that may be communicated via the display interface **222** and the display **204**. The network interface **228** enables the processor **226** to communicate with other systems via a local area network (e.g., LAN **150** of FIG. **1**) or via a wide area network (e.g., WAN **140** of FIG. **1**). Volatile storage **230** may serve as a low-latency temporary store of information for the processor **226**, and non-volatile storage **232** may serve as a long term (but higher latency) store of information.

The processor **226**, and hence the system configuration **200** as a whole, operates in accordance with one or more programs stored on non-volatile storage **232** or received via the network interface **228**. The processor **226** may copy portions of the programs into volatile storage **230** for faster access, and may switch between programs or carry out additional programs in response to user actuation of the input device. The additional programs may be retrieved from non-volatile storage **232** or may be retrieved or received from other locations via the network interface **228**. One or more of these programs executes on system configuration **200** causing the configuration to perform at least some of the receiving and sending functions of receiving station **110** and sending stations **120-126**, respectively, as disclosed herein.

Although a fully equipped computer system is shown in the illustrative embodiment of FIGS. **2**A and **2**B, other embodiments that comprise less options may be used that are suitable as the receiving station **110**. At least some embodiments of receiving station **110** comprise only some of the hardware features shown in FIGS. **2**A and **2**B, and only execute the software necessary to establish a remote session (sometimes referred to as a "thin" client). Other embodiments of the receiving station, with various combinations of hardware features and installed software, will become apparent to those skilled in the art, and all such embodiments of the receiving station are intended to be within the scope of the present disclosure.

FIG. **3** shows a method **300** suitable for establishing a session between the receiving station **110** and one of the sending stations of FIG. **1**, in accordance with at least some illustrative embodiments. After a user initiates a remote session request to a collection of sending stations (e.g., sending stations **120-126** of FIG. **1**), a search domain is determined identifying the sending stations to be searched (block **302** of FIG. **3**). As previously described, the search domain may be defined in a variety of ways, including using a locally cached list based upon a network discovery mechanism. Such a mechanism may include queries in the form of a broadcast or multicast network query directed to the subnet address of LAN **150** to which the sending stations **120-126** are coupled. A variety of software tools and driver kits may be used to provide such network discovery capabilities (e.g., Bonjour™ by Apple Computer®) and all such software tools and driver kits are intended to be within the scope of the present disclosure.

By utilizing the peer-to-peer configuration of the receiving and sending stations **120-126** to determine the search domain, the need for a terminal server or even an allocation server (used to allocate available sending stations to requesting receiving stations in some systems) is eliminated. A receiving station **110** communicates directly with each sending station **120-126** to determine the search domain, effectively creating a distributed allocation manager. In this manner, computer resources on a network can be utilized as shared resources which are made available to remote users. By making use of otherwise unused or under used computer resources, the additional cost of operating large and expensive terminal servers is avoided, and existing resources are used more effectively.

Continuing to refer to FIG. **3**, once the search domain has been determined, the receiving station **110** begins to sequentially contact each sending station **120-126** within the search domain in order to find a sending station that is available and that meets the filtering criterion requested by the user of the receiving station **110**. The receiving station **110** contacts the first sending station within the domain (block **304**) and checks whether the station meets the filtering criterion (block **306**). If the criterion is met, the receiving station **110** establishes a remote session with the selected sending station (block **308**) ending the method **300** (block **310**). If the criterion is not met (block **306**), and there are still sending stations within the search domain to be queried (block **312**), the receiving station **110** contacts the next sending station (i.e., a sending station not already contacted during the current attempt to establish a remote session) within the search domain (block **314**) and the process is repeated. If the search criterion is not met after the last station within the search domain is contacted (blocks **306** and **312**), the user is notified that there are no sending stations available that meets the requested criterion (block **316**), ending the method **300** (block **310**).

Although the above embodiment of the method **300** describes contacting each station within the domain in some form of a sequential order (e.g., in alphabetical order by station name), other selection and contacting orders, such as random orders, or predefined hierarchical orders are also possible. Thus, for example, the receiving station **110** would attempt to establish a remote session with a higher performance sending station first, a medium performance sending station next, and then other lower performance sending stations as necessary. Other orderings will become apparent to those skilled in the art, and all such orderings are intended to be within the scope of the present disclosure.

Regardless of other filtering criteria requested by the user, a sending station **120-126** must be "available" in order for receiving station **110** to establish a session with the sending station **120-126**. In at least some illustrative embodiments, a sending station that is "available" means that no user is logged on to that particular sending station. In at least some other illustrative embodiments, the sending station can compare the user credentials provided by the receiving station to those of a user already logged in. If the credentials match, the sending station is considered "available" with respect to that specific user, and the user is then allowed to re-establish or restore a previously interrupted or suspended session between the receiving station and the sending station.

In the embodiments described above, receiver software **112** and sender software **128** each incorporate functions associated with determining which sending station **120-126** is suitable for the remote session requested by the user, as well as functions associated with actually establishing the remote session. In at least some illustrative embodiments, these functions may be implemented by separate software modules or sub-functions, as shown in FIG. **4**. Thus, for example receiver software **112** may comprise a grid client sub-function (Grid Client) **132**, and a session client sub-function (Sess Client) **134**, wherein the grid client **132** determines which sending stations are suitable for a remote session, and the session client **134** provides the remote session itself. In such an embodiment, sender software **128** would similarly comprise a grid service sub-function (Grid Svc) **152** that responds to queries from grid client **132**, and a session service sub-function (Sess Svc) **154** that responds to queries from session client **134**.

By dividing the functions of the receiver software **112** and the sender software **128** into sub-functions as described above, it is possible for the receiver software **112** to cause the receiver station **110** to locally cache all of the information needed for determining the search domain and applying the filtering criteria to said cached information in order to identify a suitable sending station **120-126** for a remote session. FIG. **5** shows a method **400**, which is similar to method **300**, except that locally cached information is used in blocks **404** and **414**. The information is received from each of the sending stations **120-126** and cached by the receiving station **110** prior to performing the method **400**. The information comprises the same information retrieved when a sending station **120-126** is contacted according to method **300**, such as login status, hardware capabilities and loaded software. In at least some illustrative embodiments, the information is maintained in storage **114** of receiving station **110**, and is updated periodically by grid client **132**.

As noted above, the information needed by the receiver software **112** is acquired and cached before a user attempts to initiate a remote session. In at least some illustrative embodiments this is achieved by executing both grid client **132** and grid service **152** on each of the receiving station **110** and sending stations **120-126** respectively upon the startup of receiving station **110** and sending stations **120-126**. Upon starting up, network discovery tools such as those previously described and incorporated into receiver software **112** may be used to determine which sending stations **120-126** are active on LAN **150**. The status of each sending station may also be determined at that time, enabling the receiving station **110** to cache the information described above. When a user attempts to initiate a remote session, grid client **132** of receiver software **112** performs the method **400** to determine if a sending station **120-126** is available that meets the user-specified filtering criteria.

If a sending station is found, grid client **132** then causes session client **134** of receiver software **112** to execute and to initiate a remote session with the identified sending station. Grid client **132** also notifies grid service **152** of sender software **128** executing on the selected sending station that said sending station has been selected. Grid service **152** responds to the notification by causing session service **154** of the sender software **128** to be executed, thus enabling it to respond to the remote session request originated by receiver software **112** executing on receiving station **110**.

The above discussion is meant to be illustrative of the principles and various embodiments of the present invention. Numerous variations and modifications will become apparent to those skilled in the art once the above disclosure is fully appreciated. For example, although the embodiments described are presented within the context of a general user remotely accessing the sending systems, at least some other illustrative embodiments exist wherein the systems and methods described are used by system administrators for remote administration of the sending systems, both individually as well as together as a distributed remote access service. Further, in at least some illustrative embodiments a separate administrative interface is provided to provide additional controls (e.g., to logoff or disconnect users). It is intended that the following claims be interpreted to embrace all such variations and modifications.

What is claimed is:

1. A method, comprising:

identifying, by a receiving station, a filtering criterion defining a processing capability requested by the receiving station, wherein the processing capability is to be provided by a remote session host over a remote desktop session;

identifying, by the receiving station, a plurality of sending stations that potentially satisfy the filtering criteria, wherein each of the sending stations is a remote session host couplable to the receiving station in a peer-to-peer configuration;

evaluating, by the receiving station, processing capabilities of each of the sending stations relative to the filtering criterion;

determining, by the receiving station, based on a result of the evaluating, whether at least one of the sending stations meets the filtering criterion; and

establishing, by the receiving station, the remote desktop session between the receiving station and one of the sending stations for which the filtering criterion is determined to be met.

2. The method of claim **1**, wherein determining whether at least one of the sending stations meets the filtering criterion further comprises selecting the filtering criterion, wherein the filtering criterion comprises at least one criterion selected from the group consisting of whether at least one of the sending stations has no users logged on, whether the user logged onto the receiving station is already logged on to at least one of the sending stations, whether hardware of at least one of the sending stations meets a minimum hardware configuration specified by the user, and whether software specified by the user is loaded on at least one of the sending stations.

3. The method of claim **1**, further comprising determining a search domain comprising a list of potential remote session hosts by accessing a configuration file stored on the receiving station, the configuration file comprising a list identifying the plurality of sending stations.

4. The method of claim **1**, further comprising determining, by the receiving station, a list of potential remote session hosts by obtaining a sending station list from a server, the sending station list identifying the plurality of sending stations.

5. The method of claim **1**, further comprising determining, by the receiving station, a list of potential remote session hosts by building a list of sending stations based on which of the sending stations respond to a query message from the receiving station.

6. The method of claim **5**, further comprising the one of the sending stations selecting the query message, wherein the query message comprises at least one type of message selected from the group consisting of a network broadcast message and a network multicast message.

7. A system, comprising

a receiving station comprising a first processor, receiver software executes on the first processor and causes the receiving station to:

identify a filtering criterion defining a processing capability requested by the receiving station, wherein the processing capability is to be provided by a remote session host over a remote desktop session;

identify a plurality of sending stations that potentially satisfy the filtering criteria, wherein each of the sending stations is a remote session host couplable to the receiving station in a peer-to-peer configuration;

evaluate processing capabilities of each of the sending stations relative to the filtering criterion;

determine whether at least one of the sending stations meets a filtering criterion; and

establish the remote desktop session between the receiving station and one of the sending stations for which the filtering criterion is met.

8. The system of claim **7**, further comprising the one of the sending stations comprising a second processor and coupled to the receiving station in a peer-to-peer configuration, wherein sender software executes on the second processor, and wherein the sender software responds to queries from the receiver software.

9. The system of claim **7**, wherein the filtering criterion comprises at least one criterion selected from the group consisting of whether at least one of the sending stations has no users logged on, whether the user logged onto the receiving station is already logged on to at least one of the sending stations, whether hardware of at least one of the sending stations meets a minimum hardware configuration specified by the user, and whether software specified by the user is loaded on at least one of the sending stations.

10. The system of claim **7**, wherein the receiver software further causes the receiving station to determine a search domain comprising a list of potential remote session hosts by accessing a configuration file stored on the receiving station, the configuration file comprising a list identifying each of the plurality of sending stations.

11. The system of claim **7**, wherein the receiver software further causes the receiving station to determine a list of potential remote session hosts by obtaining a sending station list from a server, the sending station list identifying the plurality of sending stations.

12. The system of claim **7**, wherein the receiver software further causes the receiving station to determine a list of potential remote session hosts by building a list of sending stations based on which of the sending stations responds to a query message send by the receiving station.

13. The system of claim **12**, wherein the query message comprises at least one type of message selected from the group consisting of a network broadcast message, and a network multicast message.

14. A non-transitory computer-readable medium encoded with software that causes a processor of a receiving station to:

identify a filtering criterion defining a processing capability requested by the receiving station, wherein the processing capability is to be provided by a remote session host over a remote desktop session;

identify a plurality of sending stations that potentially satisfy the filtering criteria, wherein each of the sending stations is a remote session host couplable to the receiving station in a peer-to-peer configuration;

evaluate processing capabilities of each of the sending stations relative to the filtering criterion;

determine whether at least one of the sending stations meets the filtering criterion; and

establish the remote desktop session between the receiving station and one of the sending stations for which the filtering criterion is met.

15. The computer-readable medium of claim **14**, wherein the filtering criterion comprises at least one criterion selected from the group consisting of whether at least one of the sending stations has no users logged on, whether the user logged onto the receiving station is already logged on to at least one of the sending stations, whether hardware of at least one of the sending station meets a minimum hardware configuration specified by the user, and whether software specified by the user is loaded on at least one of the sending stations.

16. The computer-readable medium of claim **14**, wherein the software further causes the processor to determine a search domain comprising a list of potential remote session hosts by accessing a configuration file stored on the receiving station, the configuration file comprising a list identifying the plurality of sending stations.

17. The computer-readable medium of claim **14**, wherein the software further causes the processor to determine a list of potential remote session hosts by obtaining a sending station list from a server, the sending station list identifying the plurality of sending stations.

18. The computer-readable medium of claim **14**, wherein the software further causes the processor to determine a list of potential remote session hosts by building a list of sending stations based on which sending stations respond to a query message from the receiving station.

19. The computer-readable medium of claim **18**, wherein the query message comprises at least one type of message selected from the group consisting of a network broadcast message and a network multicast message.

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